

LISTING OF THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A coated object, comprising:
a substrate having at least one functional layer; and
at least one interlayer being arranged in said at least one functional layer, said at least one interlayer having a layer thickness of less than or equal to 10 nm interrupting the morphology of said at least one functional layer, and dividing said at least one functional layer in a plurality of partial layers, said at least one functional layer comprises at least one chloride and at least one element selected from the group consisting of an oxide, a nitride, a carbide, a selenide, a telluride, and a sulfide.
2. (Previously presented) The coated object as claimed in claim 1, wherein said at least one interlayer interrupts the morphology of said at least one functional layer at least once such that said plurality of partial layers are formed and a layer thickness of said plurality of partial layers remains below a predetermined layer thickness at which a phase transformation of said at least one functional layer no longer occurs.
3. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer is a predominantly crystalline layer, and said at least one interlayer interrupts the morphology of said at least one functional layer at least once such that said plurality of partial layers are formed and said at least one functional layer has dense columns that are laterally tightly cohesive, grow perpendicular to a surface of said substrate and have substantially no tendency to widen out.
4. (Cancelled).

5. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer comprises a plurality of elements selected from the group consisting of oxides, nitrides, carbides, fluorides, chlorides, selenides, tellurides, and sulfides.

6. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer comprises an element selected from the group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

7. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer comprises a plurality of elements selected from the group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

8. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer comprises a plurality of mixed systems each comprising one element selected from a first group consisting of oxides, nitrides, carbides, fluorides, chlorides, selenides, tellurides, and sulfides, said first group being compounded with at least one element selected from a second group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

9. (Previously presented) The coated object as claimed in claim 8, wherein said plurality of mixed systems comprise one element selected from the group consisting of metal oxides, metal nitrides, and metal carbides.

10. (Previously presented) The coated object as claimed in claim 9, wherein said plurality of mixed systems comprise at least two metallic components.

11. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer comprises a plurality of mixed systems comprising a plurality of elements selected from a first group consisting of oxides, nitrides, carbides, fluorides, chlorides, selenides, tellurides, and sulfides, which are compound said first group being compounded with at least one element selected from a second group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

12. (Previously presented) The coated object as claimed in claim 11, wherein said plurality of mixed systems comprise one element selected from the group consisting of metal oxynitrides, metal carbonitrides, and metal oxycarbonitrides.

13. (Previously presented) The coated object as claimed in claim 12, wherein said plurality of mixed systems comprise at least two metallic components.

14. (Previously presented) The coated object as claimed in claim 1, further comprising a plurality of different functional layers applied to said substrate.

15. (Previously presented) The coated object as claimed in claim 1, wherein said at least one interlayer has a different chemical composition than said at least one functional layer.

16. (Previously presented) The coated object as claimed in claim 1, wherein said at least one interlayer comprises one element selected from the group consisting of oxides, nitrides, carbides, fluorides, chlorides, selenides, tellurides, and sulfides.

17. (Previously presented) The coated object as claimed in claim 1, wherein said at least one interlayer comprises a plurality of elements selected from the group consisting of oxides, nitrides, carbides, fluorides, chlorides, selenides, tellurides, and sulfides.

18. (Previously presented) The coated object as claimed in claim 1, wherein said at least one interlayer comprises one element selected from the group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

19. (Previously presented) The coated object as claimed in claim 1, wherein said at least one interlayer comprises a plurality of elements selected from the group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

20. (Previously presented) The coated object as claimed in claim 1, wherein said interlayer comprises a plurality of mixed systems comprising one element selected from a first group consisting of oxides, nitrides, carbides, fluorides, chlorides, selenides, tellurides, and sulfides, said first group being compounded with at least one element selected from a second group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

21. (Previously presented) The coated object as claimed in claim 20, wherein said plurality of mixed systems comprise one element selected from the group consisting of metal oxides, metal nitrides, and metal carbides.

22. (Previously presented) The coated object as claimed in claim 21, wherein said plurality of mixed systems comprise at least two metallic components.

23. (Previously presented) The coated object as claimed in claim 1, wherein said at least one interlayer comprises a plurality of mixed systems, said plurality of mixed systems comprising a plurality of elements selected from a first group consisting of oxides, nitrides, carbides, fluorides, chlorides, selenides, tellurides, and sulfides, said first group being with at least one element selected from a second group consisting of Li, Be, Na, Mg, Al, Si, Ca, Sc, Ti, Cr, Zn, Ge, Sr, Y, Zr, Nb, Cd, In, Sn, Sb, Te, La, Ce, Pr, Nd, Sm, Gd, Yb, Lu, Hf, Ta, Tl, Pb, Bi, and Th.

24. (Previously presented) The coated object as claimed in claim 23, wherein said plurality of mixed systems comprise one element selected from the group consisting of metal oxynitrides, metal carbonitrides, and metal oxycarbonitrides.

25. (Previously presented) The coated object as claimed in claim 24, wherein said plurality of mixed systems comprise at least two metallic components.

26. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer is an optical functional layer and said at least one interlayer interrupts the morphology of the optical functional layer and divides the optical functional layer in said plurality of partial layers.

27. (Currently amended) The coated object as claimed in claim 26, wherein said optical ~~function~~ functional layer has a layer thickness in the range from 10 to 1000 nm.

28. (Currently amended) The coated object as claimed in claim 26, wherein said optical ~~function~~ functional layer has a layer thickness in the range from 30 to 500 nm.

29. (Previously presented) The coated object as claimed in claim 26, wherein said plurality of partial layers have a layer thickness in the range from 10 to 70 nm.

30. (Previously presented) The coated object as claimed in claim 26, wherein said plurality of partial layers have a layer thickness in the range from 20 to 45 nm.

31. (Previously presented) The coated object as claimed in claim 26, wherein said layer thickness of the said at least one interlayer is in the range from 0.3 to 10 nm.

32. (Previously presented) The coated object as claimed in claim 26, wherein said layer thickness of the said at least one interlayer is in the range from 1 to 3 nm.

33. (Previously presented) The coated object as claimed in claim 26, wherein said layer thickness of the said at least one interlayer is in the range from 1.5 to 2.5 nm.

34. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer comprises a plurality of functional layers defining an alternating optical layer system, said alternating optical layer system comprising a high refractive index layer and a low refractive index layer.

35. (Previously presented) The coated object as claimed in claim 34, wherein said high refractive index layer is interrupted by a plurality of interlayers with a low refractive index.

36. (Currently amended) ~~The coated object as claimed in claim 34,~~ A coated object, comprising:

a substrate having at least one functional layer; and
at least one interlayer being arranged in said at least one functional layer, said at least one interlayer having a layer thickness of less than or equal to 10 nm interrupting the morphology of said at least one functional layer, and dividing said at least one functional layer in a plurality of partial layers,

wherein said at least one functional layer comprises a plurality of functional layers defining an alternating optical layer system, said alternating optical layer system comprising a high refractive index layer and a low refractive index layer, and

wherein said low refractive index layer is interrupted by a plurality of interlayers with a high refractive index.

37. (Previously presented) The coated object as claimed in claim 34, wherein said high refractive index layer comprises one element selected from the group consisting of titanium oxide, titanium aluminum oxide, and zirconium oxide.

38. (Previously presented) The coated object as claimed in claim 36, wherein said high refractive index layer comprises one element selected from the group consisting of titanium oxide, titanium aluminum oxide, and zirconium oxide.

39. (Previously presented) The coated object as claimed in claim 34, wherein said low refractive index layer comprises silicon oxide.

40. (Previously presented) The coated object as claimed in claim 35, wherein said plurality of interlayers with a low refractive index comprise silicon oxide.

41. (Previously presented) The coated object as claimed in claim 26, wherein said substrate comprises glass.

42. (Previously presented) The coated object as claimed in claim 26, wherein the coated object is useable as an optical element selected from the group consisting of a reflector for digital projection, a lens for digital projection, a mirror for digital projection, an illumination means for digital projection, a reflector for stage, a lens for stage, an illumination means for stage, a reflector for architectural lighting, a lens for architectural lighting, an illumination means for architectural lighting, a prism for the UV wavelength region, a lens for the UV wavelength region, a mirror for the UV wavelength region, a reflector for the UV wavelength region, a filter for the UV wavelength region, an illumination means for the UV wavelength region, a prism for the IR wavelength region, a lens for the IR wavelength region, a mirror for the IR wavelength region, a reflector for the IR wavelength region, a filter for the IR wavelength region, an illumination means for the IR wavelength region, a display for monitors, and a display unit.

43. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer is made from a metal and said at least one interlayer is made from a metal oxide.

44. (Currently amended) ~~The coated object as claimed in claim 43,~~ A coated object, comprising:

a substrate having at least one functional layer; and
at least one interlayer being arranged in said at least one functional layer, said at least one interlayer having a layer thickness of less than or equal to 10 nm interrupting the morphology of said at least one functional layer, and dividing said at least one functional layer in a plurality of partial layers,

wherein said at least one functional layer is made from a metal and said at least one interlayer is made from a metal oxide, and

wherein said at least one functional layer comprises chromium and said at least one interlayer comprises chromium oxide.

45. (Currently amended) ~~The coated object as claimed in claim 43,~~ A coated object, comprising:

a substrate having at least one functional layer; and
at least one interlayer being arranged in said at least one functional layer, said at least one interlayer having a layer thickness of less than or equal to 10 nm interrupting the morphology of said at least one functional layer, and dividing said at least one functional layer in a plurality of partial layers,

wherein said at least one functional layer is made from a metal and said at least one interlayer is made from a metal oxide, and

wherein the coating object is useable as a carrier element for lithographic processes.

46. (Previously presented) The coated object as claimed in claim 1, wherein said at least one functional layer is a protective layer and said at least one interlayer interrupts the morphology of said protective layer and divides said protective layer in said plurality of partial layers.

47. (Previously presented) The coated object as claimed in claim 46, wherein said protective layer has a layer thickness in the range from 100 to 20,000 nm.

48. (Previously presented) The coated object as claimed in claim 46, wherein said protective layer has a layer thickness in the range from 500 to 10,000 nm.

49. (Previously presented) The coated object as claimed in claim 46, wherein said protective layer has a layer thickness in the range from 1500 to 5000 nm.

50. (Previously presented) The coated object as claimed in claim 46, wherein said plurality of partial layers have a layer thickness in the range from 30 to 500 nm.

51. (Previously presented) The coated object as claimed in claim 46, wherein said plurality of partial layers have a layer thickness in the range from 100 to 250 nm.

52. (Previously presented) The coated object as claimed in claim 46, wherein said at least one interlayer has a layer thickness in the range from 0.3 to 10 nm.

53. (Previously presented) The coated object as claimed in claim 46, wherein said at least one interlayer has a layer thickness in the range from 1 to 5 nm.

54. (Previously presented) The coated object as claimed in claim 46, wherein said protective layer has a morphology with a plurality of columns which, on average, have a lateral extent of less than 1 μm .

55. (Previously presented) The coated object as claimed in claim 46, wherein said protective layer has a morphology with a plurality of columns which, on average, have a lateral extent of less than 200 nm.

56. (Previously presented) The coated object as claimed in claim 46, wherein said protective layer comprises silicon nitride.

57. (Previously presented) The coated object as claimed in claim 46, wherein said protective layer comprises zirconium oxide in a thermally stable crystal phase.

58. (Previously presented) The coated object as claimed in claim 46, wherein said at least one interlayer comprises one element selected from the group consisting of zirconium nitride, silicon oxide, and titanium aluminum oxide.

59. (Previously presented) The coated object as claimed in claim 46, wherein said substrate comprises glass.

60. (Previously presented) The coated object as claimed in claim 46, wherein the coated object is useable as a cooking plate for a cooking hob.

61. (Previously presented) A coated object, comprising:
a substrate having at least one functional layer; and
at least one interlayer, which is different than said at least one functional layer,
being arranged in said at least one functional layer, said at least one interlayer having
the same refractive index as said at least one functional layer and said at least one
interlayer forming a layer which interrupts the morphology of said at least one functional
layer.

62. (Previously presented) The coated object as claimed in claim 61, wherein
said at least one functional layer comprises a metal oxide and said at least one
interlayer comprises a metal oxide having at least two metallic components, wherein
said at least one interlayer has a refractive index that can be varied by adjusting a
quantitative ratio of said at least two metallic components.

63. (Previously presented) The coated object as claimed in claim 61, wherein
said at least one functional layer comprises zirconium oxide and said at least one
interlayer comprises titanium aluminum oxide, wherein said at least one interlayer has a
refractive index that can be varied by adjusting a quantitative ratio of titanium and
aluminum in said titanium aluminum oxide.

64. (Previously presented) The coated object as claimed in claim 61, wherein
said at least one interlayer comprises a metal oxide and said at least one functional
layer comprises a metal oxide having at least two metallic components, wherein said at
least one functional layer has a refractive index that can be varied by adjusting a
quantitative ratio of said at least two metallic components.

65. (Previously presented) The coated object as claimed in claim 61, wherein
said at least one interlayer comprises zirconium oxide and said at least one functional
layer comprises titanium aluminum oxide, wherein said at least one functional layer has
a refractive index that can be varied by adjusting a quantitative ratio of titanium and
aluminum in said titanium aluminum oxide.

66. (Currently amended) A coated object, comprising:

a substrate having at least one optical functional layer, said at least one optical functional layer having a layer thickness between 20 and 1,000 nm, having a predominantly amorphous layer, and having at least one interlayer arranged therein, said at least one interlayer having a different morphology than said at least one optical functional layer, having a layer thickness less than or equal to 10 nm, and dividing said at least one optical functional layer in a plurality of partial layers so that said plurality of partial layers have a layer thickness between 10 and 50 nm, said at least one functional layer comprises at least one chloride and at least one element selected from the group consisting of an oxide, a nitride, a carbide, a selenide, a telluride, and a sulfide.

67. (Currently amended) A coated object, comprising:

a substrate having at least one optical functional layer, said at least one optical functional layer having a layer thickness between 20 and 1,000 nm, having a predominantly crystalline layer in a thermally instable crystal phase, and having at least one interlayer arranged therein, said at least one interlayer having a different morphology than said at least one optical functional layer, having a layer thickness less than or equal to 10 nm, and dividing said at least one optical functional layer in a plurality of partial layers so that said plurality of partial layers have a layer thickness between 10 and 50 nm, said at least one functional layer comprises at least one chloride and at least one element selected from the group consisting of an oxide, a nitride, a carbide, a selenide, a telluride, and a sulfide.

68. (Currently amended) A coated object, comprising:

a substrate having at least one protective functional layer, said at least one protective functional layer having a layer thickness between 100 and 20,000 nm, having a predominantly crystalline layer in a thermally stable crystal phase, and having at least one interlayer arranged therein, said at least one interlayer having a different morphology than said at least one protective functional layer, having a layer thickness less than or equal to 10 nm, and dividing said at least one protective functional layer in a plurality of partial layers so that said plurality of partial layers have a layer thickness between 30 and 500 nm, said at least one functional layer comprises at least one chloride and at least one element selected from the group consisting of an oxide, a nitride, a carbide, a selenide, a telluride, and a sulfide.

69. (Previously presented) A diffusion-inhibiting container, comprising:

a substrate;

a functional layer disposed on said substrate; and

an interlayer arranged in said functional layer, wherein said interlayer has a layer thickness of less than or equal to 10 nm, interrupts the morphology of said functional layer, and divides said functional layer in a plurality of partial layers.

Claims 70-75. (Cancelled).

76. (Withdrawn) The coated object as claimed in claim 26, wherein said substrate comprises one element selected from the group consisting of metal, glass, glass-ceramic, composite, and plastic.

77. (Withdrawn) The coated object as claimed in claim 46, wherein said substrate comprises one element selected from the group consisting of glass, glass-ceramic, and nonmetallic crystalline materials.